

3.0A Surface Mount Schottky Barrier Rectifiers

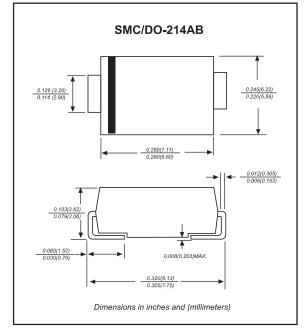
Features

- The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- For surface mounted applications
- Metal silicon junction, majority carrier conduction
- Low power loss, high efficiency
- Built-in strain relief, ideal for automated placement
- High forward surge current capability
- High temperature soldering guaranteed: 260°C/10 seconds at terminals
- Compliant to RoHS 2.0

Mechanical data

- Case: JEDEC DO-214AB molded plastic body
- ◆ Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- · Polarity: Color band denotes cathode end
- + Mounting Position: Any

Package outline



Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

Rating	Symbol	MBRS320T3G	MBRS330T3G	MBRS340T3G	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	20	30	40	V
Average Rectified Forward Current	I _{F(AV)}	3.0 @ T _L = 110°C 4.0 @ T _L = 105°C		A	
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I _{FSM}	80		A	
Operating Junction Temperature	ТJ		– 65 to +150		°C
ISO 7637 Pulse #1 (100 V, 10Ω)			5000		Pulses
ESD Ratings: Machine Model = C Human Body Model = 3B			> 400 > 8000		V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Lead	$R_{ ext{ heta}JL}$	11	°C/W
ELECTRICAL CHARACTERISTICS			
Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 3.0 \text{ A}, T_J = 25^{\circ}\text{C}$)	V _F	0.50	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^{\circ}$ C) (Rated dc Voltage, $T_J = 100^{\circ}$ C)	i _R	2.0 20	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.



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0.8

30

35

dc

40

0.9 1.0

i_F INSTANTANEOUS FORWARD CURRENT (AMPS) T = 100°C . T_J = 100°C T_J = 125°C T₁ = 125°C T_J = 25°C $T_J = 25^{\circ}C$. 」= −40°C -40°C -65°C ТJ -65°C 0.1 0.1 0.8 0.6 0.7 0.7 0 0.1 0.2 0.3 0.4 0.5 0.9 1.0 0.1 0.2 0.3 0.4 0.5 0.6 VF, INSTANTANEOUS FORWARD VOLTAGE (V) V_F, MAXIMUM INSTANTANEOUS FORWARD VOLTAGE (V) Figure 1. Typical Forward Voltage Figure 2. Maximum Forward Voltage (S1.E-01 1.E-02 1.E-03 1.E-03 1.E-04 1.E-04 1.E-05 1.E-01 (SdWb) 1.E-02 1.E-03 1.E-03 1.E-04 1.E-04 1.E-05 1.E-05 T_J = 125°C 125°C $T_J = 100^{\circ}C$ $T_J = 100^{\circ}C$ T_J = 25°C T.₁ = 25°C ______ 40_____1.E-06_0 1.E-06 10 15 20 25 30 35 5 10 15 20 25 n 5 V_R, REVERSE VOLTAGE (V) V_R, REVERSE VOLTAGE (V) Figure 3. Typical Reverse Current Figure 4. Maximum Reverse Current 5 P_{FO}, AVERAGE POWER DISSIPATION (W) 2 Freq = 20 kHz 4.5 1.8 dc $R_{\theta JL} = 11^{\circ}C/W$ SQUARE 4 1.6 WAVE $I_{PK}/I_{O} =$ 3.5 1.4 З 1.2 $I_{PK}/I_{O} = 5$ SQUARE WAVE 2.5 1 2 0.8 1.5 0.6 1 0.4 0.5 0.2 0 0 L 90 0.5 100 110 120 130 140 150 0 1.5 2 2.5 3 3.5 T_L, LEAD TEMPERATURE (°C) IO, AVERAGE FORWARD CURRENT (A) Figure 5. Current Derating Figure 6. Forward Power Dissipation

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Rating and characteristic curves

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IF, INSTANTANEOUS FORWARD CURRENT (AMPS)

Io, AVERAGE FORWARD CURRENT (AMPS)

4

4.5 5



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700 TYPICAL CAPACITANCE AT 0 V = 658 pF $T_J = 25^{\circ}C$ 600 C, CAPACITANCE (pF) 500 400 300 200 100 0 4 8 12 16 20 24 28 32 36 40 0 V_B, REVERSE VOLTAGE (V) Figure 7. Typical Capacitance

Rating and characteristic curves

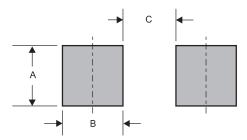
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode	1 [] 2	1 2

Marking

Type number	Marking code	Example
MBRS320T3G MBRS330T3G MBRS340T3G	B34	B34 Marking code

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	В	С
SMC	0.132 (3.30)	0.100 (2.50)	0.176(4.40)



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1.Storage environment: Temperature=5°C~40°C Humidity=55%±25% 2.Reflow soldering of surface-mount devices **Critical Zone** TL to TP ΤР Ramp-up ΤL тι Tsmax ----Tsmin Temperature tS Preheat Ramp-down 25 t25°C to Peak Time 3.Reflow soldering

Suggested thermal profiles for soldering processes

Profile Feature	Soldering Condition
Average ramp-up rate(T⊾ to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to T∟ -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T∟) -Time(t∟)	217°C 60~260sec
Peak Temperature(T⊧)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t⊵)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes